AWACS
Airborne Warning & Control Systems

New Horizons Symposium

13-14 November 1997

Presented By:
Gary S. Connor, Colonel, (S) USAF
Program Director
AW
781-377-6899

Outline

- Organization
- Mission
- Overview: existing contracts
- Overview: new Projects
- Industry opportunities
- Future needs/trends

Organization

SPD - Col(S) Connor / SSM - Col(S) Bruno
781-377-6899
Deputy SPD - Mr LaRochelle (GS-15)
781-377-5643
Tech Director - Mr Linder (MTS)
781-377-6899

NAPMA Rep

Program Management & Integration (AWB)
Maj Wert
781-377-5824

Weapon System Arch & Eng (AWW)
Maj Chapa
781-377-1249

Sustainment & Support (LAK)
Mr Fagan (GS-15)
Tinker AFB
405-736-2370

Mission Equipment
Mr Adams
Robins AFB
912-926-2576

- **AWX** — **Financial Management**
  Lt Col Heidmann
  781-377-5894
- **AWK** — **Contracts**
  Mr Youtt (GS-14)
  (Acting)
  781-377-5758
- **AWS** — **Security**
  Mr Harris (GS-12)
  781-377-5438
- **AWT** — **Test**
  Lt Col Spicer
  (Boeing - Seattle)
  253-657-1642

- **AWM** — **Mission Support & System Integration**
  Lt Col Cocchiarella
  781-377-5802
- **AWR** — **Sensors**
  Lt Col Worsowicz
  781-377-5875
- **AWC** — **Comm/Nav/ Comp & Displays**
  Maj Milligan
  781-377-5631
- **AWP** — **Block 30/35 Modification**
  Mr Martin (GS-14)
  781-377-6909

- **AWI** — **International**
  (Vacant)
  - **AWIN** — **NATO**
    Lt Col Stack
    781-377-6637
  - **AWIF** — **FR/UK**
    Lt Col Lane
    781-377-8117
  - **AWIS** — **Saudi**
    Vacant (0-5)
- **AWG** — **767**
  Col(S) O'Connor
  781-377-5767

Realignment Focus Areas

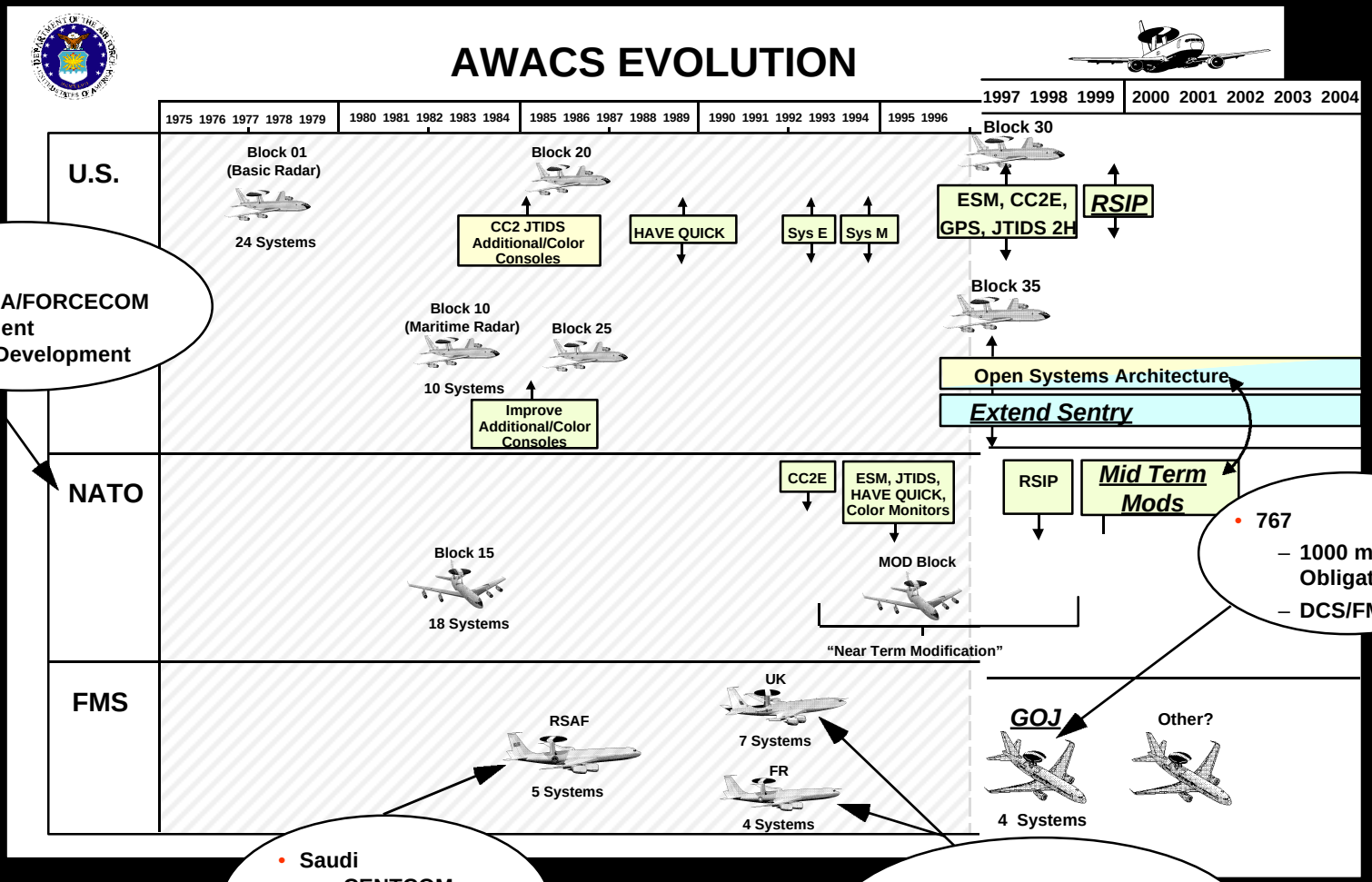
AWACS Program Office Mission

An Innovative Government/Industry team that Rapidly Delivers and Effectively Sustains AWACS Weapon System Capabilities for our Warfighting Customers

Existing Contracts
AWACS Program Efforts

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Japan 767	Production - Retrofit								
NATO	Production - Retrofit								
30/35 ($299M)	Production - Retrofit								
Extend Sentry ($525M)	Development - Production - Retrofit								
RSIP ($484M)	Development		Production - Retrofit						
	NATO - Production - Retrofit								
Open System Architecture ($379M)	Development - Production - Retrofit								
Sustainment ($108M)	Fleet Availability (OC ALC)								

AWACS Program Description



- NATO
  - NAPMA/FORCECOM
  - US Agent
  - Joint Development

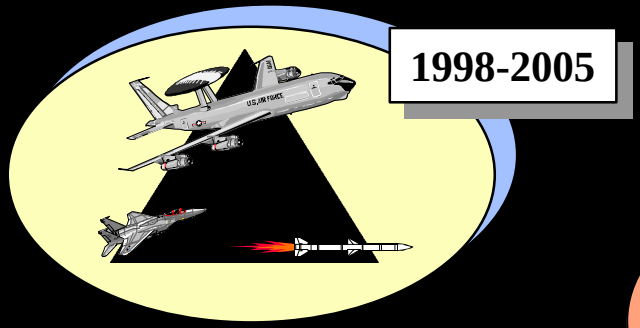
- 767
  - 1000 mile SLOC Obligation
  - DCS/FMS

- Saudi
  - CENTCOM
  - Peace Shield
  - FMS
  - Upgrades

- UK/FR
  - In Kind Contribution to NATO
  - FMS
  - Upgrades

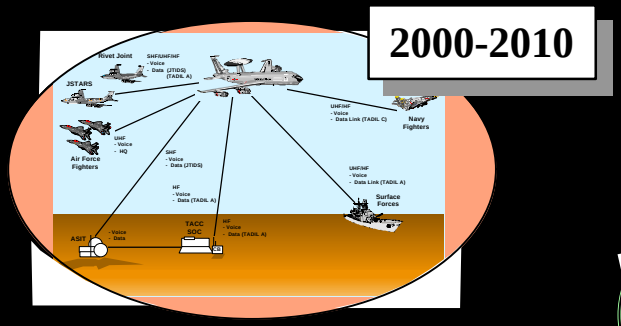
Strategic
Tactical
Sustainment

AWACS Capabilities Over Time



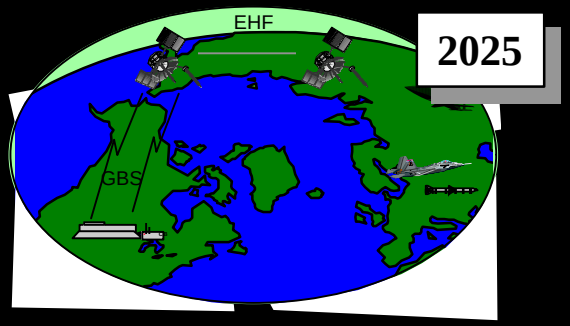
Offensive Counter Air

- Air superiority facelift
- Multiplies fighter effectiveness
- Fixes JADO/JEZ deficiencies
- Partial DII/COE Compliance
- Same O&M infrastructure



Theater Air Defender

- Plugs into Battlefield Info Network
- Multiplies F-22, Aegis/SM-2, GBR/THAAD
- NATO interoperable
- Full DII/COE Compliance
- Foundation for Ground C^2
- Streamlined, lower cost O&M/training



Global C4I Network

- AWACS replacement
- Combination of airborne/spaceborne sensors with ground processing

Single Integrator
Single Installation Plan

Reduce Cost of Ownership

Insert Technology

Common System Architecture

Sustainable

Interoperable

Comm
IFF
Radar
Nav
Computers
Architecture

BOEING

Key Features

- Lower Ownership Costs
- Improved Capabilities
- Improved Availability
- Enhanced International Team

Challenges Ahead

- Define System HW/SW Architecture
- Flexibility for Unique Requirements
- Define and Accept Single Integrator Role

Integrator Responsibility

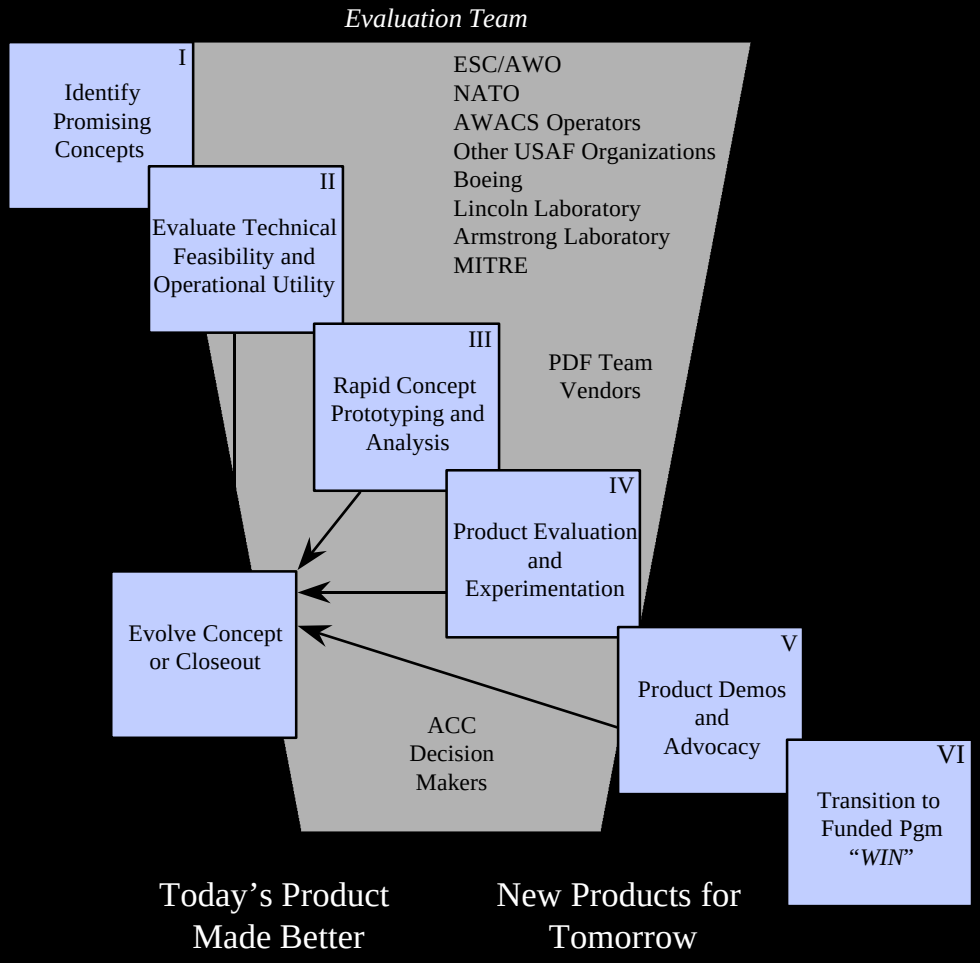
- Operates - Prototype Development Facility …Open to All Potential Hardware/Software Vendors

Prototype Development Facility (PDF)

Program Description

- The PDF, located at Boeing, Seattle, leverages existing industry IR&D efforts and serves to identify new capabilities, demonstrate prototypes to the user community ("try it before you buy it"), and develop new systems for the airplane quickly, flexibly, and at low cost.

PDF Goal: Continuously Increase the Value of the Product to the Consumer

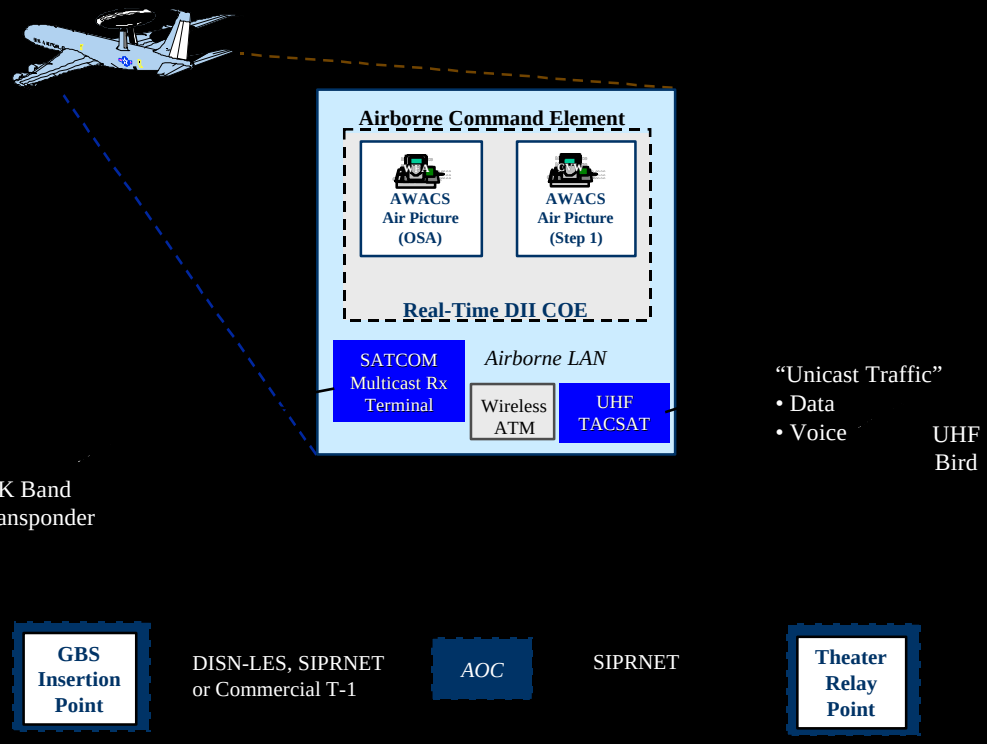


PDF **Current Initiatives**

Expeditionary Force Experiment 98

Airborne C2 and Real-Time Common Operational Picture

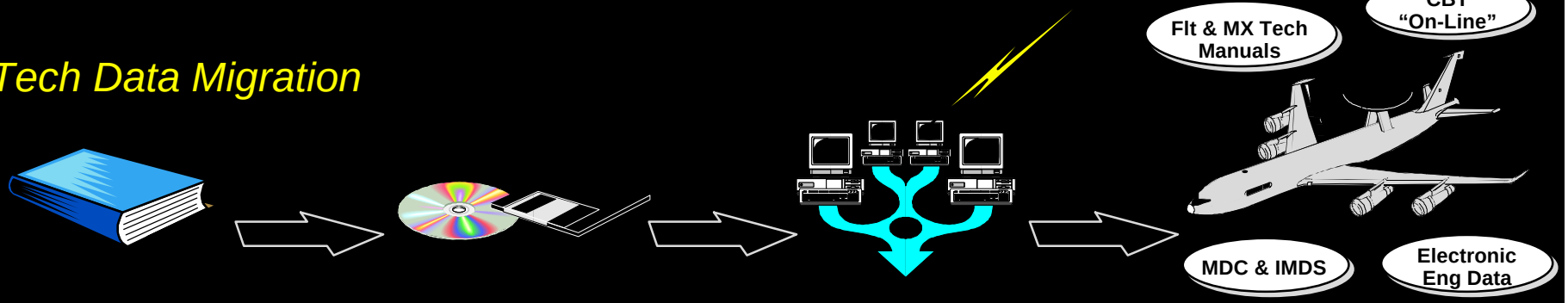
- Step 1 Upgrade (migration path to open, real-time DII COE computer system architecture);
- Receives and Updates current COP database, including Automated ATO, through Phased Array Antenna and/or Wireless ATM;
- Live Air Picture Disseminated to AOC Rear and Elsewhere



Points of Contact:
Karen Hathaway, ESC/AWW, (781) 377-6866
and/or
Art Lounsbery, Boeing, (206) 657-2534

Logistics and Sustainment Issues

Tech Data Migration



Hard Copy Tech Data Delivery	PDF	IETM	System - Wide OSA Environment
• Non-Value Adding Steps • Costly to Maintain • DoD Policy - Acquire All Data in Machine-Readable Form Rather Than Paper	• "Page - Turner" • Not easy to Modify • E-3 has 6 T.O.s in Digital Form	• SGML Tagged • IMDS / GO22 • Some Data Links, e.g., CBT • Migrate to CITIS • Develop Core Data Once, Use as Source Data for All Applications	• Electronic Delivery on the "Net" • On-Line Engineering, Maintenance, Training Data • System-Wide Data Links

Today → **Open System Architecture**

Logistics and Sustainment Issues

Project "X"

2-level Support

12 Mo

12 Mo

18 Mo

TOs
Support Equip
Spares

Early Delivery
Contractor Log. Support
Simple, Box Level
Remove & Replace
Maintenance

Supportable
Design Iterations
and
Prototypes

Flexible Support
Plan for Iterative
Upgrades

Just-In-Time Support
Contractor Support
Box Level Maintenance
Operational Tech Data
• TOPS/OPS are challenge

Define Modular
Support Requirements

System Design
Matures

Logistics Infrastructure
ETD, ETM's, CBT, ATE

Next Spiral: Fleet
Mod Complete

Aircraft Infrastructure
Upgraded, "n" Acft Mod'd

Design Interface
BIT, ATP-TPS

Changing Technology
and Changing

Design
Maturity

Logistics
Infrastructure

ESC/AWL

• Guarantee Supportability
• Deliver operational
capability fast

Initial Logistics
Concepts &
Planning

Deliver Supportability
Documentation & Equipment
to the Wing and ALCs

spiral.ppt

Future Needs/Trends

AWACS Mission Computer Upgrade

- COTS Workstations drive all SDCs
- New Tracker algorithm
- New HCI, maps, fully integrated displays (including JTIDS)
- Fully networked computers and displays provide low cost growth potential
- Limited DII COE Compatibility

PROTOTYPE & DEMONSTRATION

12/96

CC-2E (IBM 370)

CAU

AOCP

RDMX (DMX Emulator, PowerPC)

9/95

Bubble Memory

Tape/ HDS

Printer

SCSI

LAN

Best of Breed Tracker (PowerPC)

9/96

W/S

W/S

W/S

W/S

W/S

A3

A3

A3

A3

A3

ECSP Replacement (PowerPC)

A3 SDC #14

Radar

IFF

ESM

TADIL A/C

Nav

JTIDS

Etc

CPS (I/0)

1553 Ready

Overview
New Projects

- SBIR - Dual-use data links for networking of wide bandwidth digital data
  - Anticipated Schedule: FY99
    - Final RFP: Pending Approved Project
  - Program Value: Unknown
  - Customer: AWACS
  - POC:
    - Ms Karen Hathaway
    - ESC/AWO
    - 781-377-6866 (DSN 478)

Industry Opportunity

Dual-use data links for networking of wide bandwidth digital data

- This SBIR contract would explore the application of commercial satellite systems and commercial networking protocols and techniques to the secure, military environment for air surveillance and command and control
- Anticipated procurement approach: Small Business Innovation Research (SBIR)
  - Advanced Techniques for beyond the horizon reachback of surveillance and air situation data
  - Remote operation of air warning and control systems
  - Advanced data modems and network protocols
  - Dual-use data link systems for remoting data in peace and war time
  - Web-based data presentation command and control

Future Needs/Trends

- Emphasize Areas for the Future
  - Open System Software
  - Spiral Development/Spiral Sustaiment
  - Open System Computers and Displays
  - Wide Band Digital Data Links
- Continuing Areas of Emphasis/Trends
  - Improve Capability
  - Improve Reliability
  - Improve Sustainment